**Purpose**

**High-Risk Surgical Patients**
The purpose of the trial is to evaluate the safety and efficacy of the Medtronic CoreValve System in the treatment of symptomatic severe aortic stenosis in subjects who have a predicted high risk for aortic valve surgery.

**Extreme Risk Patients**
The purpose of the trial is to evaluate the safety and efficacy of the Medtronic CoreValve System in the treatment of symptomatic severe aortic stenosis in subjects necessitating aortic valve replacement, with predicted operative mortality or serious, irreversible morbidity risk of ≥50 percent at 30 days.

**Design**

**High-Risk Surgical Patients**
Subjects will be randomized on a 1:1 basis to either transcatheter aortic valve implant (TAVI) with the Medtronic CoreValve System (MCS) or to surgical aortic valve replacement (SAVR).

**Extreme Risk Patients**
This is a prospective, nonrandomized clinical trial. All enrolled patients will be assigned to transcatheter aortic valve implant (TAVI) with the Medtronic CoreValve System (MCS).

**Objective**

**High-Risk Surgical Patients**
The primary objective is to demonstrate that the safety and effectiveness of the Medtronic CoreValve System (MCS) as measured by all-cause mortality rates at 12 months is noninferior to surgical aortic valve replacement (SAVR) in the treatment of symptomatic severe aortic stenosis in subjects who have a predicted high risk for aortic valve surgery.

**Extreme Risk Patients**
The primary objective of the trial is to demonstrate the safety and effectiveness of the Medtronic CoreValve System (MCS), as measured by a composite of all-cause death or major stroke at 12 months, in subjects necessitating aortic valve replacement, with predicted operative mortality or serious, irreversible morbidity risk of ≥50 percent at 30 days.

**Contact Us for More Information**

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Inclusion Criteria

1. Subject must have co-morbidities such that one cardiologist and two cardiac surgeons agree that medical factors preclude operation, based on a conclusion that the probability of death or serious morbidity exceeds the probability of meaningful improvement. Specifically, the predicted operative risk of death or serious, irreversible morbidity is ≥50 percent at 30 days (for Extreme Risk patients)

OR

Subject must have co-morbidities such that one cardiologist and two cardiac surgeons agree that predicted risk of operative mortality is ≥15 percent (and predicted operative mortality or serious, irreversible morbidity risk of <50 percent) at 30 days. (for High-Risk Surgical patients)

2. Subject has senile degenerative aortic valve stenosis with:
   • mean gradient >40 mmHg or jet velocity greater than 4.0 m/s by either resting or dobutamine stress echocardiogram, or simultaneous pressure recordings at cardiac catheterization (either resting or dobutamine stress), AND
   • an initial aortic valve area of ≤0.8 cm² (or aortic valve area index ≤0.5 cm²/m²) by resting echocardiogram or simultaneous pressure recordings at cardiac catheterization

3. Subject is symptomatic from his/her aortic valve stenosis, as demonstrated by NYHA Functional Class II or greater

4. The subject or the subject’s legal representative has been informed of the nature of the trial, agrees to its provisions and has provided written informed consent as approved by the IRB of the respective clinical site

5. The subject and the treating physician agree that the subject will return for all required post-procedure follow-up visits

Exclusion Criteria

1. Evidence of an acute myocardial infarction ≤30 days before the MCS TAVI procedure

2. Any percutaneous coronary or peripheral interventional procedure performed within 30 days prior to:
   • the MCS TAVI procedure (for Extreme Risk patients)
   • the index procedure including bare metal stents. Additionally, any drug eluting stents placed within six months prior to the index procedure (for High-Risk Surgical patients)

3. Blood dyscrasias as defined: leukopenia (WBC <1000/mm³), thrombocytopenia (platelet count <50,000 cells/mm³), history of bleeding diathesis or coagulopathy

4. Untreated clinically significant coronary artery disease requiring revascularization

5. Cardiogenic shock manifested by low cardiac output, vasopressor dependence, or mechanical hemodynamic support

6. Need for emergency surgery for any reason

7. Severe ventricular dysfunction with left ventricular ejection fraction (LVEF) <20 percent as measured by resting echocardiogram

8. Recent (within six months) cerebrovascular accident (CVA) or transient ischemic attack (TIA)

9. End stage renal disease requiring chronic dialysis or creatinine clearance <20 cc/min

10. Active GI bleeding within the past three months

11. A known hypersensitivity or contraindication to any of the following which cannot be adequately premedicated: aspirin, heparin (HIT/HITTS) and bivalrudin (only for Extreme Risk patients), nitinol (titanium or nickel), ticlopidine and clopidogrel, contrast media

12. Ongoing sepsis, including active endocarditis

13. Subject refuses a blood transfusion

14. Life expectancy <12 months due to associated noncardiac co-morbid conditions

15. Other medical, social or psychological conditions that in the opinion of an investigator precludes the subject from appropriate consent

16. Severe dementia (resulting in either inability to provide informed consent for the trial/procedure, prevents independent lifestyle outside of a chronic care facility, or will fundamentally complicate rehabilitation from the procedure or compliance with follow-up visits)

17. Currently participating in an investigational drug or another device trial

18. Symptomatic carotid or vertebral artery disease

19. Subject has been offered surgical aortic valve replacement but declined (only for High-Risk Surgery patients)

20. Native aortic annulus size <18 mm or >29 mm per the baseline diagnostic imaging

21. Pre-existing prosthetic heart valve in any position

22. Mixed aortic valve disease (aortic stenosis and aortic regurgitation with predominant aortic regurgitation (3-4+))

23. Moderate to severe (3-4+) or severe (4+) mitral or severe (4+) tricuspid regurgitation

24. Moderate to severe mitral stenosis

25. Hypertrophic obstructive cardiomyopathy

26. New and untreated echocardiographic evidence of intracardiac mass, thrombus or vegetation

27. Severe basal septal hypertrophy with outflow gradient

28. Aortic root angulation (angle between plane of aortic valve annulus and horizontal plane/vertebrae) >70° (for femoral and left subclavian/axillary access) and >30° (for right subclavian/axillary access)

29. Ascending aorta that exceeds the maximum diameter for any given native aortic annulus size (see table below)

30. Congenital bicuspid or unicuspid valve verified by echocardiography

31. Sinus of valsalva anatomy that would prevent adequate coronary perfusion

32. Transarterial access not able to accommodate an 18Fr sheath

For more information, refer to www.clinicaltrials.gov and www.AorticStenosisTrial.com